2003-04 Northern Bobwhite Hunter Cooperator Survey Report

Kentucky Department of Fish and Wildlife Resources

Prepared by: John Morgan, Wildlife Biologist

Introduction

The 2003-04 northern bobwhite report is a compilation of three surveys the Kentucky Department of Fish and Wildlife Resources conducts annually to monitor quail production and hunter success. First, the Quail Wing Survey provides samples that can be used to age quail. Juvenile quail wings collected from successful quail hunters across the state are backdated to determine the hatch date. Therefore, we can identify peak hatching and length of the nesting season. Additionally, juvenile to adult female ratios can be generated to estimate annual recruitment rates. Second, the Quail Hunter Log Survey summarizes hunting activity and success of hunters across the state. With that data, we can create population trends from flush and harvest data and track hunter effort and success. Finally, the rural mail carriers of Kentucky contribute observations from their routes through the Mail Carrier Survey. The last week of July, rural route drivers record quail observations and miles driven. We use that information to develop an index of the population and as a means to forecast the upcoming hunting season.

All surveys are strictly voluntary and we strongly encourage all Kentucky quail hunters and rural mail carriers to participate in these surveys. Hunter cooperators receive this report, detailing the past year's hatch, hunting season results, and expectations for the upcoming season. Cooperators also receive a new hunting log and wing envelopes for the upcoming season and a small gift of appreciation for their participation. Mail carriers receive a subscription to *Kentucky Afield* magazine for their support.

I. Quail Wing Survey

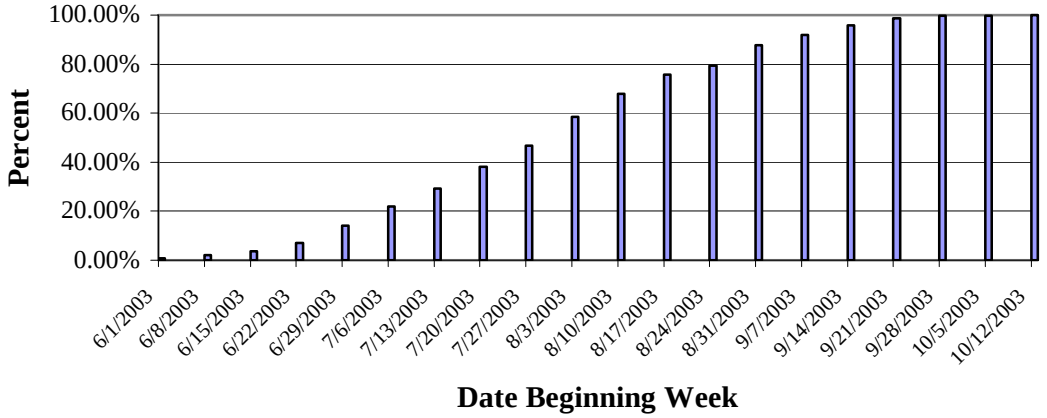
Successful northern bobwhite hunters were surveyed by a volunteer mail-in method whereby wing collection envelopes were provided. Envelopes were distributed directly to all cooperators from previous years and to new cooperators through county conservation officers and regional wildlife division personnel upon request. Supplies of envelopes were also made available at the Game Farm, Minor Clark Fish Hatchery, and all KDFWR Wildlife Management Area offices.

Age of the harvested birds was determined by measuring the length of the outermost primary (Petrides 1942, Petrides and Nestler 1943, Rosene 1969). Juveniles were backdated from date of harvest to determine the primary hatching dates for the nesting season. Hunters in the field, utilizing instructions on the wing collection envelopes, determined the sex of collected individuals.

During the 2003-04 northern bobwhite hunting season, 63 successful quail hunters mailed in 705 wings from 201 hunts across 33 counties (Appendix A). One hundred eighty-nine wings could not be backdated, because the individuals were adults or juveniles greater than 150 days of age. The proportion by quail age class was 80.0% juvenile and 20.0% adult. The productivity estimate was 11.0 juveniles per adult hen from this year’s sample. Overall, 53.1% of the birds were male and 46.8% were female.

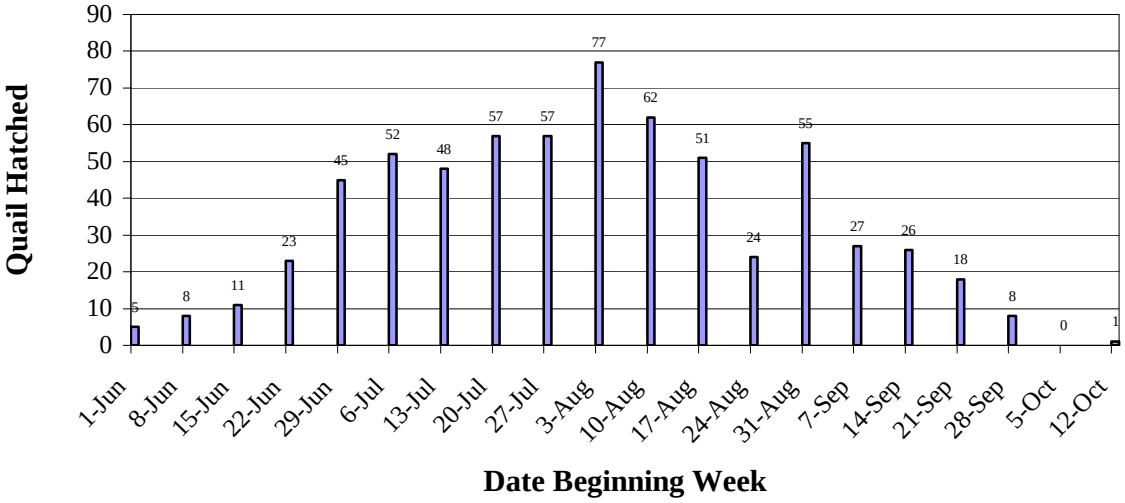
Approximately 88% of the hatch in 2003 occurred before September 1st (Figure 1). The September 1st date is important, because birds hatched after this date are expected to have low survival and are not likely a part of next spring's breeding population.

Figure 1. Cummlative proportion of juveniles hatched by week from Quail Wing Survey, 2003-04.



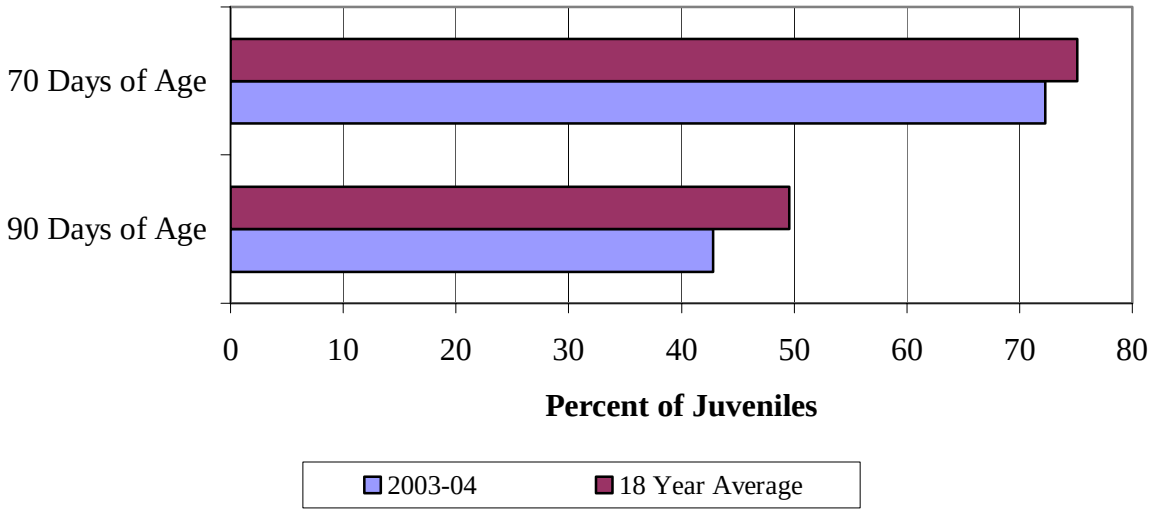
The peak hatch spanned from mid July to late August (Figure 2). The chronological distribution is typical compared to the l8-year survey period. The overall hatch dates are later than anticipated based on historical reports prior to initiation of this survey. Earlier work conducted on a western Kentucky population of quail showed that the majority of the hatch was over by the first two weeks of July (1957-58 P-R reports). Likewise, a study in Indiana showed the primary hatch occurring before the middle of July (Reeves 1954). However, nearly all the data from this survey have indicated major portions of the hatch in Kentucky occurring during the last two weeks of July and first two weeks of August. The 2003-04 data follow that trend.

Figure 2. Number of juvenile quail hatched per week from Quail Wing Survey, 2003-04.



Early season hunters occasionally encounter undersized birds. Kentucky's later nesting season increases its likelihood. Fortunately, most undersized birds would not have survived the winter, so their harvest is of little consequence to the population. Quail grow out of the "squealer" stage about 70 days of age, and they have plumage and flight capabilities similar to adult birds at that time. However, the 70-day old quail will weigh less than an adult. A 90-day old quail is indistinguishable in size and plumage characteristics to the untrained observer. At the November 1st opening, 72% of the juvenile birds were 70 days old or older and 43% of the juveniles were at least 90 days old. By comparison, the 2003 hatch was slightly later than the 18-year average, but the difference was minimal (Figure 3). Extraordinarily wet weather in the late spring and early summer may have contributed to that difference. Data from the early season, November 1st through 30th, indicated 83% of hunter cooperators thought harvested birds were of satisfactory size.

Figure 3. Age at the beginning of hunting season from Quail Wing Survey, 2003-04.



II. Hunter Log Survey

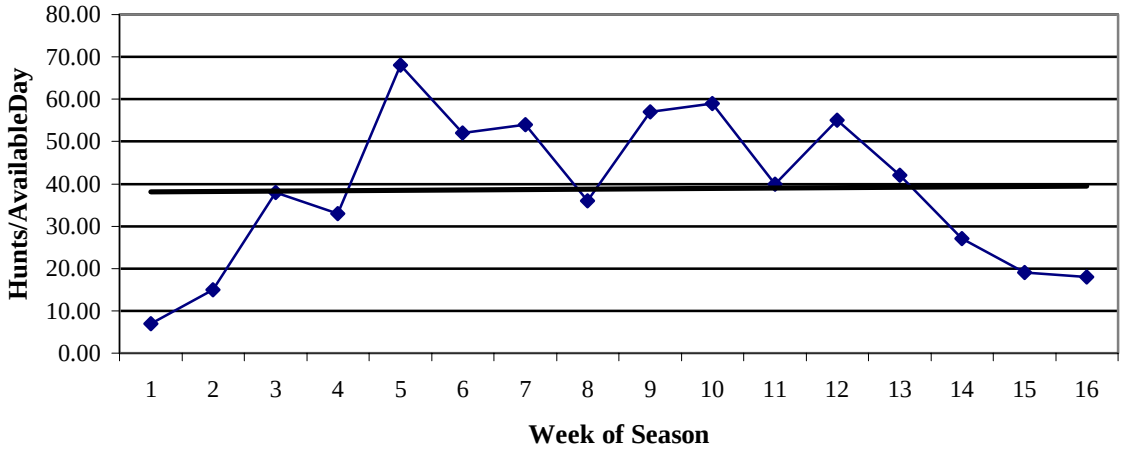
The Quail Hunter Log Survey is a diary-type log that hunters keep to date throughout the hunting season. Hunters record specific information about their hunts including date, hours hunted, number of hunters, coveys flushed, number of birds harvested, among others. Hunt data are divided in weekly and monthly to monitor differences throughout the season..

Hunting logs were received from 43 hunters who averaged 14.5 hunting trips lasting 3.2 hours. Data were provided from 625 hunts in 56 counties across the state (Appendix B). On average, hunters harvested 1.9 quail and wounded 0.25 quail. Hunters reported harvesting 61.8% of the birds shot at and wounding 8.0%. Assuming wounded individuals died, hunting related mortality of fired upon birds was 69.8%.

Hunting pressure throughout the season remained fairly constant (Figure 4). Three distinct peaks of effort by week were observed and corresponded to the Thanksgiving holiday,

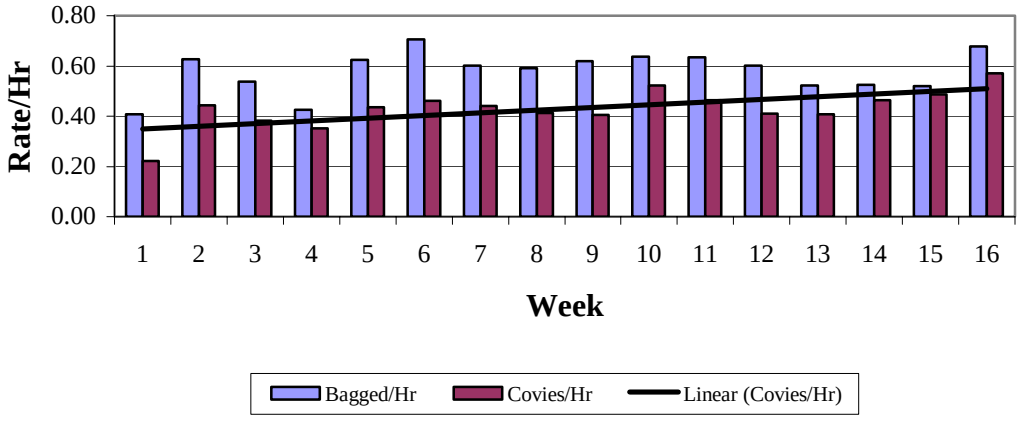
Christmas holiday, and the New Year's holiday. Overall, hunting pressure was similar to the 2002-03 hunting season.

Figure 4. Hunts/available day by week of season from the Quail Hunter Log Cooperator Survey in Kentucky, 2003-04.



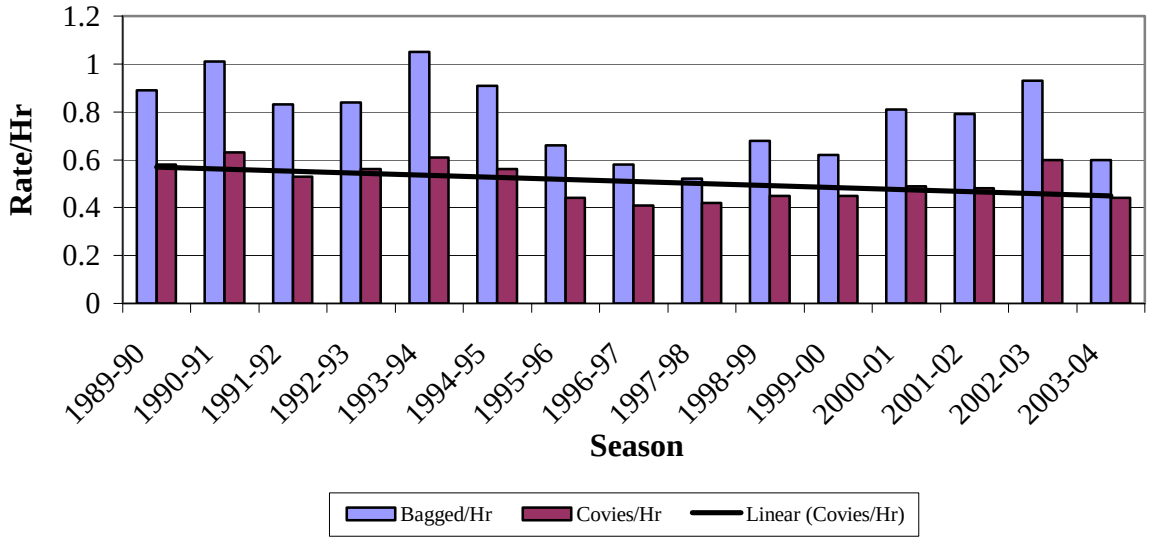
The most important data collected from the hunter logs are the flush and bag rates. In 2003-04, hunters flushed 0.44 coveys/hr (1.42/hunt) and harvested 0.6 birds/hr (1.9/hunt). The most covies flushed on a single hunt was 14, whereas the maximum harvest by a single hunting party was 40 quail. Covies were flushed at a slightly increasing rate as the season progressed, and harvest rates increased as well (Figure 5). As the season moves forward, cover degrades and home ranges tend to shrink. Therefore, birds can be easier to pinpoint and harvest towards the later part of season.

Figure 5. Quail bagged and covies flushed per hour in Kentucky, 2003-04.



According to our data, the 2003-04 season was poor overall. Flush rates decreased by 27% and harvest rates decreased by 25%. Since the 1989-90 season, last season was the third least successful (Figure 6). Trends in the flush and bag rates are slightly decreasing. Unfortunately, 2003-04 hunting log data drove the trend more downward. However, it appears that Kentucky's quail population is stabilizing to some degree. Spring and summer conditions in 2003 were far from optimal, and hunters experienced the result of poor breeding conditions. Sample sizes are too small to break out data regionally.

Figure 6. Quail harvest and covey flush rates in Kentucky, 1989-2004.



III. Mail Carrier Survey

So, what can we look forward to this season? The Mail Carrier Survey gives us a glimpse of what we can expect for the upcoming season. The survey is the oldest in the program being completed for 44 years. Although no population estimates can be derived from this data, it does provide valuable trend data showing whether the population is up, down, or stable.

Volunteer mail carriers record all observations of quail and rabbits as they travel their normal mail delivery routes. The blank survey cards are sent to the postmasters 1week prior to the census period, which was the last full week (6 delivery days) of July. Each observer recorded the number of days surveyed, the length of the route, and each quail observation on the cards. The state of Kentucky was divided into four weather divisions for comparison of quail data (Appendix C).

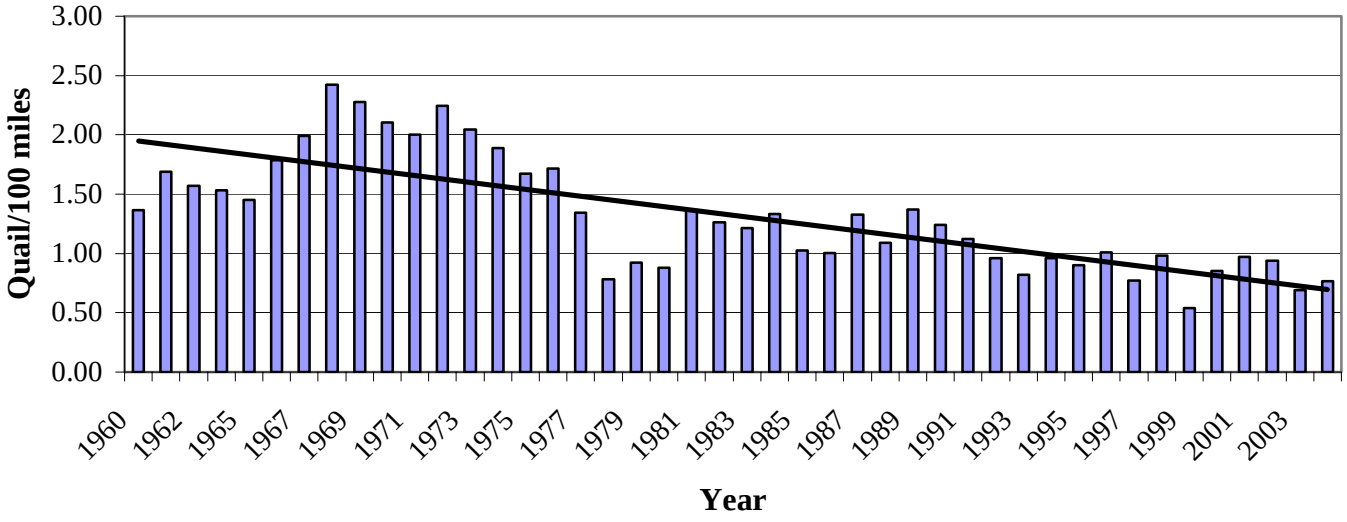
In 2004, mail carriers returned 798 of the approximately 1,200 survey cards issued, which corresponds to a 66.5% response rate. Rural carriers covered 256,713 miles and observed 1,973 quail. The statewide observation rate was 0.77 quail/100 miles traveled, a 12% increase from

2003. The central region dominated the survey accounting for 34.3% of the observed quail, and it also incurred the highest increase in observations compared to 2003 (63.5%). The bluegrass region also reported increased observation rates, whereas the western and eastern regions resulted in decrease observations (Table 1). This year showed a rebound from a dismal survey last year. Since 1960, mail carrier data have shown a steady decline in Kentucky's quail population (Figure 7). The downward progression corresponds to an average 0.9 % decline per year.

Table 1. Comparison of total quail/100 miles observed by rural mail carriers.

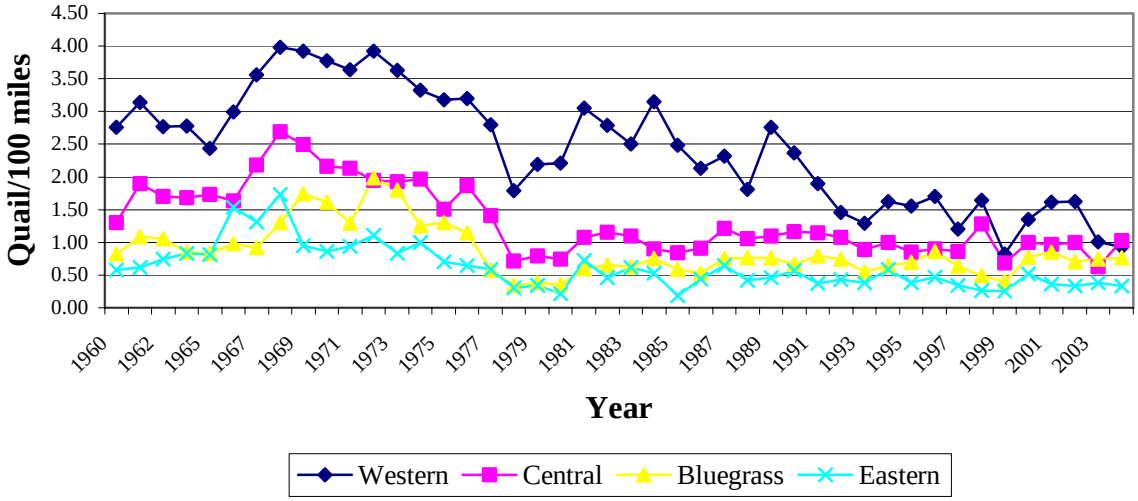
	TOTAL QUAIL/100 MILES			PERCENT CHANGE	
WEATHER	**MEAN**			**MEAN**	
DIVISION	**1960-2004***	**2003**	**2004**	**2004/1960-2004**	**2003/2004**
Western	2.43	1.01	0.93	-61.7	- 8.0
Central	1.32	0.63	1.03	-22.0	+63.5
Bluegrass	0.86	0.74	0.77	-10.4	+ 4.0
Eastern	0.62	0.38	0.34	-45.2	-10.5
Statewide	**1.32**	**0.69**	**0.77**	**-41.2**	**+11.6**
*No data available for 1964.					

Figure 7. Quail index from mail carrier survey in Kentucky, 1960-2004.



Weather regions have shown differing capacities to produce quail. Historically, the western and central weather regions have had the highest propensity to produce and sustain quail. For example, the western region originally contributed 50 percent of mail carrier quail observations and heavily affect the statewide results. Each year the regions become more similar as populations decline (Figure 8). Therefore, the quantity and quality of quail habitat in the west and central regions are approaching those of the eastern and bluegrass regions. Cleaner agricultural practices, fewer fallow areas, and widespread fescue plague the quail of the state, and it is particularly evident in western Kentucky by the plummeting mail carrier index. On the bright side, these data can help focus our efforts to maximize management and generate the largest northern bobwhite response possible. In 2004, the western region comprised 28.3% of the observations, whereas the central, bluegrass, and eastern regions constituted 34.3%, 26.9%, and 10.5%, respectively.

Figure 8. Quail indices from the Mail Carrier Survey by weather region in Kentucky, 1960-2004.



Conclusion

Unfortunately, last year's hunting data did correspond well with last year's Mail Carrier Survey. I had heard many reports from the field in Kentucky and neighboring states that quail experienced a favorable reproductive year. However, the data showed otherwise. Despite the poor Mail Carrier Survey last year, I remained hopeful for a respectable season. The Mail Carrier Survey is conducted during the peak of the breeding season (thanks to information collected from our wing cooperators), and the outcome of birds nesting during the survey may be critical to the quality of the upcoming season. So, the Mail Carrier and Hunter Log Survey may not always match. Generally, a good Mail Carrier Survey should correspond to a good hunting season, but a poor Mail Carrier Survey does not guarantee poor hunting conditions. Last year, the Mail Carrier Survey did predict a poor hunt, and the cooperators reported that their success was down. More times than not, the Mail Carrier Survey accurately predicts whether the season will be up, down, or stable.

The Missouri Department of Conservation conducts a similar survey to Kentucky's hunter logs and measures hunt quality by the following:

1 hour per covey flush = excellent
2 hours per covey flush = good
3 hours per covey flush = poor

Utilizing this rating system, the 2003-04 quail-hunting season (2.27 hours per covey flush) in Kentucky would be rated between good and poor. Given the long term declines of quail populations across the country, Kentucky's average flush and harvest rates (3.0 hour hunts producing 0.78 birds/hour and 2.3 birds/trip) compare favorably to the statewide rates of 5.5 hour hunts, producing 3.8 birds/trip reported in Oklahoma (Ellis 1972:306), 2.1 birds/trip reported for 3.7 hour hunts in Tennessee (Gudlin 1994) and 3.7 hour hunts producing 2.3 birds/trip in Virginia (Fies 1994).

In summary, we had a poor nesting season in the summer of 2003 despite wing data showing harvested adult female to juvenile ratios of 1:11.0. The peak hatch timing was normal. Hunting was worse than the 2002-03 season as coveys flushed per hour decreased 27% and harvest per hour decreased 25%. The 2004 Mail Carrier Survey indicates the 2004-05 season will be up compared to last season (12% increase in observations). Hunting should be particularly good in the central weather region of the state.

Participation in quail surveys was down 36% last year . Please encourage hunters to participate in these surveys. We need many more cooperators to accurately track the quail population across the state. Last year, only 43 hunters completed hunting logs. Fortunately, those hunters did a lot of hunting (over 600 hunts)! Nonetheless, we would like to have at least 1,000 hunts well distributed across the state. The more cooperators we have, the more accurate picture we have of our quail populations. The hunting logs are available in the 2004-05 Hunting and Trapping Guide, on the internet (www.kdfwr.state.ky.us), through wildlife/boating officers, private lands biologists, and wildlife management area staff, or by contacting the Kentucky Department of Fish and Wildlife Resources at #1 Game Farm Rd. Frankfort, KY 40601 (1-800-858-1549). Thank you to all whom participated this year, and we hope to hear from you and all of your hunting partners in next season's surveys.

Cover photo from Quail Unlimited Mall website (www.qumall.com). Artist Richard Plasschert's 1983 Quail Stamp print.

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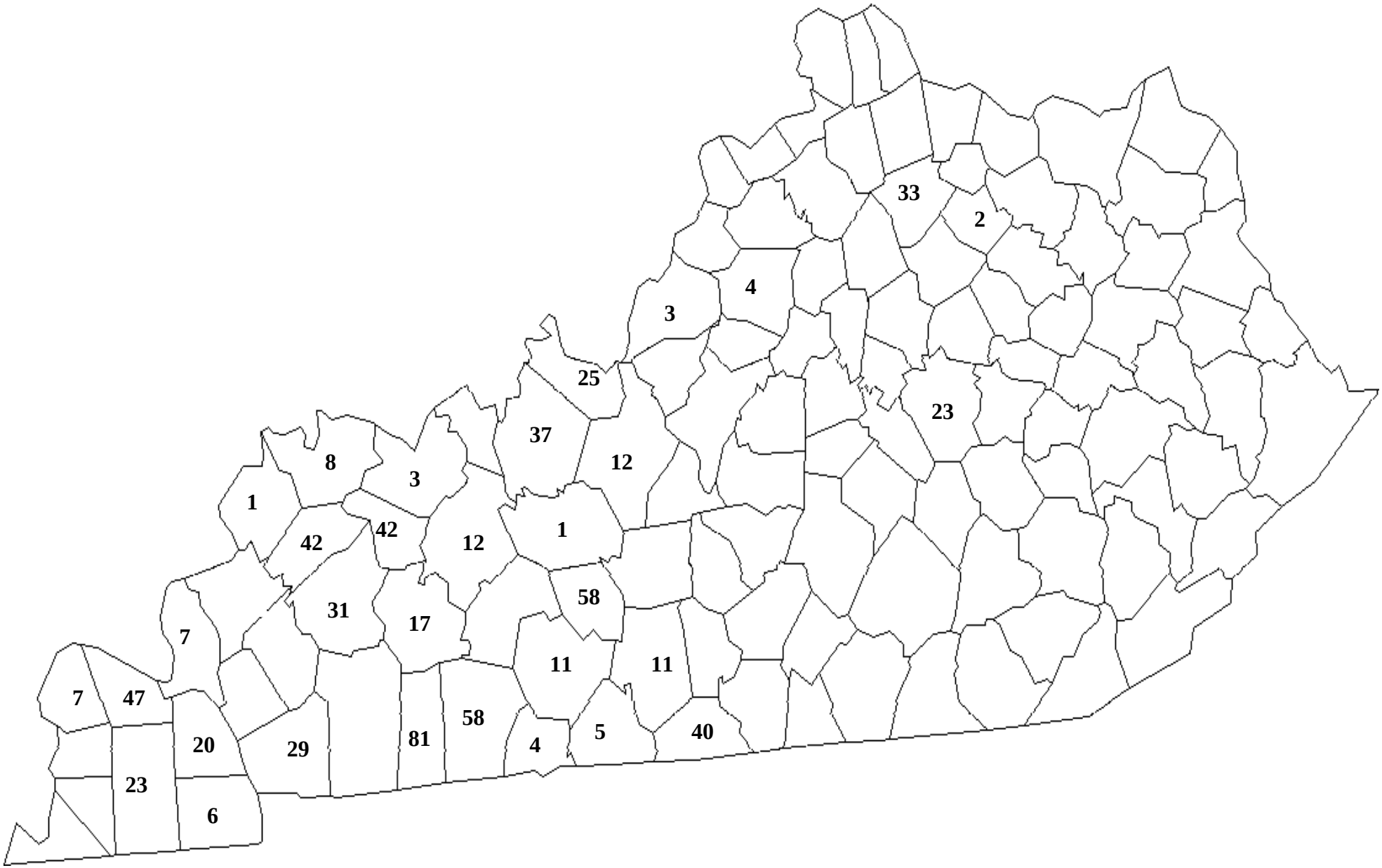
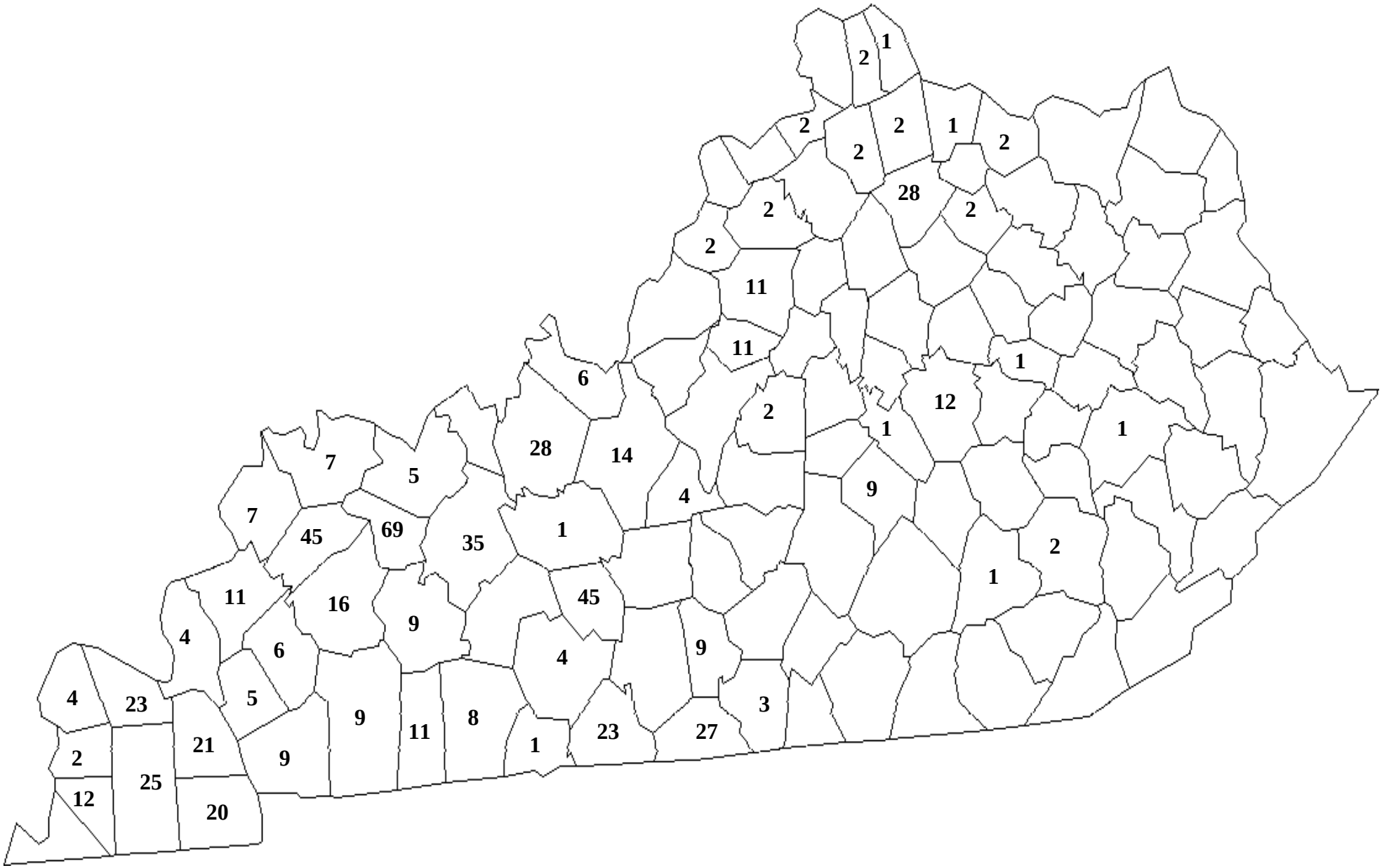
Appendix A. Number of wings collected per county for the 2003-04 Quail Wing Cooperator Survey.



Appendix B. Number of hunts reported per county for the 2003-04 Quail Log Hunter Cooperator Survey.



Appendix C. Weather Bureau divisions utilized for tabulating quail observation data.